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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
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| 10/054,051      | 01/22/2002  | Mark E. Epstein      | BOC9-2000-0039 (180) | 1351             |

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| EXAMINER |
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HIRL, JOSEPH P

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| ART UNIT | PAPER NUMBER |
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2121

DATE MAILED: 10/07/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/054,051

Applicant(s)

EPSTEIN ET AL.

Examiner

Joseph P. Hirl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

1. This Office Action is in response to an AMENDMENT entered June 30, 2004 for the patent application 10/054,051 filed on January 22, 2002.
2. The First Office Action of March 31, 2004 is fully incorporated into this Final Office Action by reference.

### **Status of Claims**

3. Claim 1 is amended. Claims 1-29 are pending.

### ***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-11 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. While the application maybe trivial, nonetheless the

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subject claims can be implemented using pencil and paper ... such is an information processing system.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-29 are rejected under 35 U.S.C. 102(a) as being anticipated by Gentilli (IEEE 0-7803-6725-1/01, referred to as **Gentili**).

**Claims 1, 17**

Gentili anticipates identifying a deviation between a correct interpretation of a data item and an incorrect interpretation of said data item (**Gentilli**, p 506, Fig. 1; Examiner's Note (EN): para 2 above applies); in a decision network comprising a hierarchical set of nodes and leaves, determining a path of traversed nodes in said decision network resulting in said deviation, wherein said nodes correspond to queries (**Gentilli**, p 505, c 2, l 12-30; Fig. 1; EN: para 2 above applies; queries are decision points and translated into a neural network, each neural node is making a decision based on the sum of inputs to produce a yes/no (binary alternative) at the output of the perceptron...i.e. answer to the question); calculating a measure of goodness at a node in said path using at least one new query as a replacement for an existing query to

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determine whether said measure of goodness improves using said at least one new query compared to said old query (**Gentilli**, p 507, c 1, l 1-20; Fig. 1; EN: para 2 above applies; to one of ordinary skill in the art, a measure of goodness is the generic inverse of a measure of wrongness); and if said measure of goodness improves, selecting said at least one new query and regrowing said decision network from said node down through said leaves using said at least one new query at said node, thereby resulting in an updated decision network (**Gentilli**, p 507, c 1, l 21-26; abstract).

**Claims 2, 18**

Gentili anticipates measure of goodness is a measure of conditional entropy or log likelihood (**Gentilli**, p 507, c 1, l 4; EN: para 2 above applies; Gentili uses a likelihood log function for an equivalent measure).

**Claims 3, 19**

Gentili anticipates regrowing step includes smoothing said decision network (**Gentilli**, p 507, c 1, l 21-26; EN: pruning is smoothing).

**Claims 4, 20**

Gentili anticipates testing said regrown decision network using said data item (**Gentilli**, p 507, c 1, l 21-26).

**Claims 5, 21**

Gentili anticipates measure of goodness is calculated at a node that is common to a path resulting in said correct interpretation and common to a path resulting in said incorrect interpretation (**Gentilli**, p 507, c 1, l 4).

**Claims 6, 13, 16, 22, 29**

Gentili anticipates decision network is a decision tree model (**Gentilli**, p 505, c 2, I 14-16).

**Claims 7, 23**

Gentili anticipates presenting at least a portion of said decision network in a graphical user interface wherein at least one node from at least one of said paths is distinguished from other nodes of said decision network (**Gentilli**, p 508, Table 1; p 508, c 1, I 15-19; EN: Table 1 is a graphical interface; computers are being used and to one of ordinary skill in the art, computers have graphical displays).

**Claim 8**

Gentili anticipates distinguishing at least one node of said first path from at least one node of said second path (**Gentilli**, p 506, c 2, I 18-40).

**Claims 9, 25**

Gentili anticipates distinguishing a node common to said first path and said second path (**Gentilli**, p 506, c 2, I 18-40).

**Claims 10, 26**

Gentili anticipates presenting decision network information selected from the group consisting of query information and training data information (**Gentilli**, p 505, c 2, I 12-30).

**Claim 11**

Gentili anticipates wherein if at least two new queries result in an improved

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measure of goodness, determining a measure of separation in said decision network using each of said queries resulting in said improved measure of goodness (**Gentilli**, p 506, c 2, l 51-54).

**Claims 12, 28**

Gentili anticipates in a decision network comprising a hierarchical set of nodes and leaves, identifying a path of nodes traversed through said decision network resulting in an interpretation of a data item, wherein said nodes correspond to existing queries (**Gentilli**, p 506, Fig. 1); calculating a measure of goodness at a node in said path using a new query as a replacement for one of said existing queries (**Gentilli**, p 507, c 1, l 1-20; p 506, Fig. 1); and if said new query results in an improved measure of goodness compared to said existing query, retraining said decision network using said new query at said node beginning with said node through said leaves of said decision network (**Gentilli**, p 506, Fig. 1).

**Claim 14**

Gentili anticipates graphical user interface configured to display one or more nodes of at least one path in a decision network resulting in a correct interpretation of a data item (**Gentilli**, p 506, Fig. 1; p 508, Table 1; p 508, c 1, l 15-19; EN: Table 1 is a graphical interface; computers are being used and to one of ordinary skill in the art, computers have graphical displays).

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**Claim 15**

Gentili anticipates configured to display one or more nodes of at least one path in said decision network resulting in an incorrect interpretation of said data item (**Gentilli**, p 508, Table 1; p 508, c 1, l 15-19).

**Claim 24**

Gentili anticipates distinguishing at least one node of said first path from at least one node of said second path (**Gentilli**, p 506, c 2, l 18-40).

**Claim 24**

Gentili anticipates if at least two new queries result in an improved measure of goodness, determining a measure of separation in said decision network using each of said queries resulting in said improved measure of goodness (**Gentilli**, p 506, Fig. 1; p 506, c 2, l 51; 507, c 1, l 1-14).

***Response to Arguments***

8. The rejection of claims 1-11 under 35 USC 112, first paragraph, is withdrawn.
9. Applicant's arguments filed on June 30, 2004 related to 35 USC 101, 35 USC 102 and applicable Claims 1-29 have been fully considered but are not persuasive.

In reference to Applicant's argument:

In paragraphs 4-5 of The Office Action, claims 1-11 have been rejected under 35 U.S.C. § 101 for being directed to non-statutory subject matter. Claim I has been amended to clarify that the present invention can be performed within an information processing system to classify data items. Operation of the method recited in claims 1-11 results in an updated decision network. As such, the Applicants believe claims 1-11 to be directed to statutory subject matter, particularly a method of tuning a decision network. The method



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is performed within an information processing system and produces the tangible result of an updated decision network that is useful for classifying data items. Accordingly, withdrawal of the 35 U.S.C. § 101 rejection regarding claims 1-11 is respectfully requested.

Examiner's response:

While the example maybe trivial, nonetheless claims 1-11 can be implemented using pencil and paper.

In reference to Applicant's argument:

In paragraphs 8-9, claims 1-29 have been rejected under 35 U.S.C. § 102(a) as being anticipated by Information Update on Neural Tree Networks (IEEE 0-7803-6725-1/01) by Stefania Gentili (Gentili). In response, Applicants have enclosed affidavits under 37 C.F.R. § 1.131 supporting the removal of Gentili as a reference. The affidavits are accompanied by a copy of the Applicants' Confidential Invention Disclosure No. BOC8-2000-0029 entitled "A Fast Way of Tuning Decision Tree Models". The confidential invention disclosure and affidavits demonstrate proof of conception for the claimed subject matter of the Applicants' invention at least as early as April 13, 2000, which predates the effective date of Gentili.

Applicants further exercised due diligence from prior to the effective date of Gentili until January 22, 2002, the filing date of the instant application. In support, the Applicants submit herewith, documentation evidencing due diligence from prior to the effective date of Gentili (October 10, 2001) through the filing of the instant application- Enclosed, please find the following documents:

- Applicants' Confidential Invention Disclosure evidencing conception at least as early as April 13, 2000;
- Letter from International Business Machines, Corp. (IBM) forwarding the Confidential Invention Disclosure to Counsel dated July 21, 2000;
- Letter from Counsel forwarding an initial draft patent application to IBM dated April 4, 2001;
- Facsimile cover sheet from Counsel forwarding a draft patent application to IBM dated May 4, 2001;
- Facsimile cover sheet from Counsel forwarding a draft patent application to IBM dated August 16, 2001,
- Letter from Counsel forwarding a final draft patent application to IBM dated October 15, 2001; and
- Excerpts from Counsel's docketing system listing the status of the patent application as "awaiting inventor review " or "in progress" as early as March 22, 2001.

As noted in the Applicants' affidavits, the Applicants conceived of the instant invention at least as early as April 13, 2000. Confidential Invention Disclosures typically undergo a review process within IBM to determine whether patent protection will be pursued for any given invention. After a decision to file for patent protection was made as a result of this process, the Confidential Invention Disclosure was forwarded to Counsel on July 21, 2000.

The Confidential Invention Disclosure then underwent Counsel's own intake procedure. In particular, the Confidential Invention Disclosure was listed in Counsel's docketing system and scheduled for work with an appropriate attorney.

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In and around this time, counsel relied upon a paper-based docketing system. The attached docketing sheet for March 22, 2001, lists the status of this application as "awaiting inventor review". The remaining docketing sheets for May 6, 2001, June 6, 2001, and September 4, 2001, provide similar indications. In any case, the docketing sheets demonstrate continued progress toward preparation of the patent application which lead to multiple drafts being circulated. on April 4, 2001; May 4, 2001; August 16, 2001; and October 15, 2001. The application was ultimately filed on January 22, 2002.

The Applicants believe that the above explanation and enclosed supporting documentation proves that Applicants exercised due diligence from prior to the effective date of Gentili and that such due diligence continued from that time through the filing of the instant patent application. The time periods described above as well as the progress toward filing the instant patent application both are common with respect to this art and demonstrate the due diligence exercised.

Examiner's response:

Applicant makes no reference in any of the referenced documents to "reduction to practice". Hence, it is assumed that from the date of conception, in and around April 13, 2000 through the date of filing, January 22, 2002, the invention had not reached the "reduction to practice" milestone. In accordance with MPEP 715.07(a), a mere statement alleging due diligence is insufficient. The inventors must show evidence that the invention was worked on every day in a material manner supporting the development of the invention and evidence of such work must be presented as part of the affidavit. Work by counsel is not evidence of due diligence by the inventors in support of daily activity on the invention that is material to the development of the invention itself. Applicant has not presented evidence of daily work from conception through date of filing. The affidavits are rejected.

In reference to Applicant's argument:

Notwithstanding, the Applicants note several distinctions between the present invention and Gentili. In particular, Gentili identifies leaves of a neural tree that misclassify data. In contrast, the present invention identifies deviations within the interior of the decision network and substitutes queries therein.

Further, Gentili deals with neural trees while the instant application is directed to decision networks. The two, however, are distinct from one another. Significantly, neural trees apply all (multiple) features at each

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each node to make a decision whereas decision networks use a single feature to make a selection (decision) at a node. As such, the instant invention identifies nodes within the decision network where a suboptimal feature was used. That feature is replaced with a different feature in an attempt to construct an improved decision network.

Additionally, Gentili relies on wrongness to determine whether a tree should be grown, whereas the present invention relies upon this criteria to measure the improvement given by the updated decision network. Finally, the Applicants note that Gentili obtains a new tree as a result of applying new training data, not by using a different feature to make a decision at a node within the decision network as is the case with the present invention.

Examiner's response:

Para 12. applies. The claims and only the claims form the metes and bounds of the invention. Applicant has **not identified any claims** that are not anticipated by the prior art of Gentili.

### ***Examination Considerations***

10. The claims and only the claims form the metes and bounds of the invention.

"Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

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11. Examiner's Notes are provided to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.
12. Examiner's Opinion: Paras 10. and 11. apply.

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
14. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Claims 1-29 are rejected.

***Correspondence Information***

16. Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (703) 305-1668. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anthony Knight can be reached at (703) 308-3179.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

or faxed to:

(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of "Proposed" or "Draft" for the desk of the Examiner).

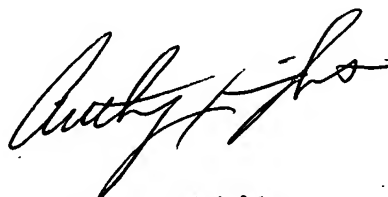
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Note: During the last two weeks of October 2004, Art Unit 2121 will move to Carlyle, Randolph Building, 5<sup>th</sup> floor and my phone and fax number will change to: 571-272-3685 and 571-273-3685, respectively. Similarly, Anthony Knight's phone and fax numbers will change to: 571-272-3687 and 571-273-3687.



Joseph P. Hirl

October 4, 2004



**Anthony Knight**  
**Supervisory Patent Examiner**  
**Group 3600**